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PTO/SB/05 (08-00)

Approved for use through 10/31/2002 OMB 0651-0032

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UTILITY PATENT APPLICATION TRANSMITTAL

(Only for new nonprovisional applications under 37 CFR 1.53(b))

APPLICATION ELEMENTS

See MPEP chapter 600 concerning utility patent application contents.

1. Fee Transmittal Form (e.g., PTO/SB/17)
(Submit an original and a duplicate for fee processing)
2. Applicant claims small entity status.
See 37 CFR 1.27.
3. Specification [Total Pages **5**]
(preferred arrangement set forth below)
 - Descriptive title of the invention
 - Cross Reference to Related Applications
 - Statement Regarding Fed sponsored R & D
 - Reference to sequence listing, a table, or a computer program listing appendix
 - Background of the Invention
 - Brief Summary of the Invention
 - Brief Description of the Drawings (if filed)
 - Detailed Description
 - Claim(s)
 - Abstract of the Disclosure
4. Drawing(s) (35 U.S.C. 113) [Total Sheets **1**]
5. Oath or Declaration [Total Pages **3**]
 - a. Newly executed (original or copy)
 - b. Copy from a prior application (37 CFR 1.63 (d))
(for continuation/divisional with Box 17 completed)

i. **DELETION OF INVENTOR(S)**
Signed statement attached deleting inventor(s)
named in the prior application, see 37 CFR
1.63(d)(2) and 1.33(b).
6. Application Data Sheet. See 37 CFR 1.76

17. If a CONTINUING APPLICATION, check appropriate box, and supply the requisite information below and in a preliminary amendment, or in an Application Data Sheet under 37 CFR 1.76:

 Continuation Divisional Continuation-in-part (CIP)

of prior application No. _____ / _____

Prior application information

Examiner _____

Group / Art Unit _____

For CONTINUATION OR DIVISIONAL APPS only: The entire disclosure of the prior application, from which an oath or declaration is supplied under Box 5b, is considered a part of the disclosure of the accompanying continuation or divisional application and is hereby incorporated by reference. The incorporation can only be relied upon when a portion has been inadvertently omitted from the submitted application parts.

18. CORRESPONDENCE ADDRESS

<input checked="" type="checkbox"/> Customer Number or Bar Code Label	24011 Insert Customer No. or Attach bar code label here		or <input type="checkbox"/> Correspondence address below		
Name	KIA SILVERBROOK				
Address	393 Darling Street,				
City	Balmain	State	NSW	Zip Code	2041
Country	Australia	Telephone	+61-2-9818-6633	Fax	+61-2-9819-6711
Name (Print/Type)	KIA SILVERBROOK		Registration No. (Attorney/Agent)		
Signature	<i>Kia Silverbrook</i>		Date October 18, 2000		

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10/20/00

FEE TRANSMITTAL for FY 2001

Patent fees are subject to annual revision

TOTAL AMOUNT OF PAYMENT (\$ 475)

Complete if Known

Application Number	
Filing Date	
First Named Inventor	<i>Kia Silverbrook</i>
Examiner Name	
Group Art Unit	
Attorney Docket No.	<i>ART84US</i>

METHOD OF PAYMENT

1. The Commissioner is hereby authorized to charge indicated fees and credit any overpayments to:
 Deposit Account Number
 Deposit Account Name
 Charge Any Additional Fee Required Under 37 CFR 1.16 and 1.17
 Applicant claims small entity status. See 37 CFR 1.27

2. Payment Enclosed:

Check Credit card Money Order Other

FEE CALCULATION

1. BASIC FILING FEE

Large Entity Small Entity

Fee Code (\$)	Fee (\$)	Fee Code (\$)	Fee (\$)	Fee Description	Fee Paid
101	710	201	355	Utility filing fee	355
106	320	206	160	Design filing fee	
107	490	207	245	Plant filing fee	
108	710	208	355	Reissue filing fee	
114	150	214	75	Provisional filing fee	

SUBTOTAL (1) (\$ 355)

2. EXTRA CLAIM FEES

Total Claims	Extra Claims	Fee from below	Fee Paid
Independent Claims	4	-20** = <input type="text"/>	0
Multiple Dependent	1	- 3** = <input type="text"/>	0
			<input type="text"/>

Large Entity Small Entity

Fee Code (\$)	Fee (\$)	Fee Code (\$)	Fee (\$)	Fee Description
103	18	203	9	Claims in excess of 20
102	80	202	40	Independent claims in excess of 3
104	270	204	135	Multiple dependent claim, if not paid
109	80	209	40	** Reissue independent claims over original patent
110	18	210	9	** Reissue claims in excess of 20 and over original patent

SUBTOTAL (2) (\$ 0)

*or number previously paid, if greater; For Reissues, see above

3. ADDITIONAL FEES

Large Entity	Small Entity	Fee Code (\$)	Fee (\$)	Fee Description	Fee Paid
105	130	205	65	Surcharge - late filing fee or oath	
127	50	227	25	Surcharge - late provisional filing fee or cover sheet	
139	130	139	130	Non-English specification	
147	2,520	147	2,520	For filing a request for <i>ex parte</i> reexamination	
112	920*	112	920*	Requesting publication of SIR prior to Examiner action	
113	1,840*	113	1,840*	Requesting publication of SIR after Examiner action	
115	110	215	55	Extension for reply within first month	
116	390	216	195	Extension for reply within second month	
117	890	217	445	Extension for reply within third month	
118	1,390	218	695	Extension for reply within fourth month	
128	1,890	228	945	Extension for reply within fifth month	
119	310	219	155	Notice of Appeal	
120	310	220	155	Filing a brief in support of an appeal	
121	270	221	135	Request for oral hearing	
138	1,510	138	1,510	Petition to institute a public use proceeding	
140	110	240	55	Petition to revive - unavoidable	
141	1,240	241	620	Petition to revive - unintentional	
142	1,240	242	620	Utility issue fee (or reissue)	
143	440	243	220	Design issue fee	
144	600	244	300	Plant issue fee	
122	130	122	130	Petitions to the Commissioner	
123	50	123	50	Petitions related to provisional applications	
126	240	126	240	Submission of Information Disclosure Stmt	
581	40	581	40	Recording each patent assignment per property (times number of properties)	120
146	710	246	355	Filing a submission after final rejection (37 CFR § 1.129(a))	
149	710	249	355	For each additional invention to be examined (37 CFR § 1.129(b))	
179	710	279	355	Request for Continued Examination (RCE)	
169	900	169	900	Request for expedited examination of a design application	
Other fee (specify) _____					

* Reduced by Basic Filing Fee Paid

SUBTOTAL (3) (\$ 120)

SUBMITTED BY

Complete if applicable

Name (Print/Type)	<i>Kia Silverbrook</i>	Registration No (Attorney/Agent)		Telephone	+612-9818-6633
Signature	<i>Kia</i>			Date	<i>October 18, 2000</i>

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TITLE OF THE INVENTION

PRINTED CARD BASED USER INTERFACE SYSTEM

FIELD OF THE INVENTION

5 The present invention relates to an user interface system for recovering digital data printed in infra-red ink in a fault tolerant encoded form on a print media using an inkjet printing system. In particular, the data may be encoded on the same surface as a human readable representation, for example an image which is related to the data which is encoded thereon.

10

CO-PENDING APPLICATIONS

Various methods, systems and apparatus relating to the present invention are disclosed in the following co-pending applications filed by the applicant or assignee of the present invention simultaneously with the present application:

US Patent Application Serial Number (which would be filed in at a later date, when the number is received)	Docket No.
09/_____	ART80US
09/_____	ART81US
09/_____	ART82US
09/_____	ART83US
09/_____	ART 85US

15

The disclosures of these co-pending applications are incorporated herein by reference.

Various methods, systems and apparatus relating to the present invention are disclosed in the following co-pending application filed by the applicant or assignee of the present invention on July 10, 1998:

20

USSN 09/113,070 (Docket No. ART02US)

USSN 09/112,785 (Docket No. ART29US)

The disclosures of this co-pending application are incorporated herein by reference.

Various methods, systems and apparatus relating to the present invention are disclosed

in the following co-pending applications filed by the applicant or assignee of the present invention on June 30, 2000:

5 USSN 09/608,308 (Docket No. CPE01US),
 USSN 09/608,779 (Docket No. CPE02US)
 USSN 09/607,987 (Docket No. CPE03US)
 USSN 09/608,776 (Docket No. CPE04US)
 USSN 09/_____ (Docket No. CPE05US)
 USSN 09/607,991 (Docket No. CPE06US)

The disclosures of these co-pending applications is incorporated herein by reference.

10

BACKGROUND OF THE INVENTION

The applicant has disclosed in pending applications USSN 09/113,070 (Docket No. ART02US) and USSN 09/112,785 (Docket No. ART29US) cards called Artcards in which the information is encoded in black ink on a white background on the reverse face of the 15 printed card, the front surface of the card bearing an image. The data that may be recorded may be the contents of a book recorded in a digital manner with the front face bearing an image equivalent to the dust jacket of the book.

In such prior art, two printheads are required in order to simultaneously print the 20 image on the front of the card and the digital data on the rear of the card. To read the card, the card is passed through an optical scanning means and the fault tolerant encoded data is reconstructed and decoded and provided to a user as an audio or visual output.

SUMMARY OF THE INVENTION

The present invention provides a user interface for reading data encoded in a fault 25 tolerant form in infra-red ink on a surface simultaneously bearing an image.

It is an object of the present invention to provide an apparatus for reading data encoded in a fault tolerant digital form printed in invisible ink on a surface of a card said surface bearing an image comprising:

30

- a) scanning means for scanning said encoded fault tolerant digital form of said data on said surface in the infra-red;
- b) means for processing said scanned data and for decoding said data into a secondary digital format;

- c) means for outputting said data in said secondary digital format to an output device with which said secondary digital format is usable;
- d) said output device presenting said data in a human readable form.

5 Preferably the invisible ink may be an infra-red (IR) absorbing ink with negligible absorption in the visible spectrum.

Preferably, the data is encoded on the card using a Reed-Solomon encoding process after compression of the data. This allows recovery of the data notwithstanding up to 30% damage to the print media upon which the data is recorded (image encoded form). The card for example may be a standard card as disclosed in co-pending applications lodged hereto
10 USSN 09/_____ (Docket No. ART80US), USSN 09/_____ (Docket No. ART81US) and USSN 09/_____ (Docket No. ART82US) of the size of a photograph of approximately 4" x 6" (102mm x 152mm). It is also contemplated that other formats are also possible for the card for example of the same width but shorter or longer depending upon the amount of data which is recorded or to be recorded on the print media.

15

BRIEF DESCRIPTION OF THE DRAWINGS

Notwithstanding any other form which may fall within the scale of the present invention, preferred forms of the invention will now be described by way of example only with reference to the accompanying drawing of Fig 1 which illustrates the card reading
20 arrangement of the preferred embodiment.

DESCRIPTION OF THE PREFERRED AND OTHER EMBODIMENTS

The preferred embodiment is preferably implemented through suitable
25 programming of a hand held device such as that described in the applicant's applications
USSN 09/_____ (Docket No. ART80US), USSN 09/_____ (Docket No. ART81US) and USSN 09/_____ (Docket No. ART82US) filed concurrently herewith by the present applicant the content of which is hereby specifically incorporated by reference. These applications make reference to the applicant's prior applications USSN 09/113,070 (Docket No. ART02US) and USSN 09/112,785 (Docket No. ART29US).

30 The aforementioned patent specifications disclose an apparatus including a camera system, hereinafter known as an "Artcam" type camera system, wherein sensed images can be directly printed out by the camera unit using an inkjet pagewidth printhead having at

least four separate inkjet nozzles for printing a color image and an infra-red image simultaneously on a print media. A pagewidth printhead of this type was described by the applicant in co-pending applications USSN 09/608,308 (Docket No. CPE01US), USSN 09/608,779 (Docket No. CPE02US), USSN 09/607,987 (Docket No. CPE03US), USSN 5 09/608,776 (Docket No. CPE04US), USSN 09/_____ (Docket No. CPE05US), and USSN 09/607,991 (Docket No. CPE06US) and the descriptions thereof are hereby specifically incorporated by reference.

In the above referenced patent specifications, namely USSN 09/_____, (Docket No. ART80US), USSN 09/_____ (Docket No. ART81US) and USSN 10 09/_____ (Docket No. ART82US), data in a fault tolerant encoded form is printed in infra-red ink over a color image. The data which was described in each of these specifications related respectively to storing a fault tolerant encoded digital form of the image itself, a fault tolerant encoded digital form of the image itself along with an image processing program script which enabled the image to be processed to produce a given 15 effect thereon, and a copy of the image itself and of a transformed copy of that image, the transformation being achieved by a program which could be separately loaded into the camera system.

In the present application, the invention resides in recording digital data on an image, the digital data relating to other than the image itself or any manipulation thereof. 20 For example, as described in the applicant's prior art of USSN 09/113,070 (Docket No. ART02) a card may be printed using a fault tolerant digitally encoded form comprising a book on one surface of a print media while on the other face of the print media an image is recorded, for example in this case the dust jacket of the book. The cards that were described were of the size of a credit card of approximately 85mm x 55mm size. The card 25 was printed on both faces. In the present invention the card needs only to be printed on one face with the data being recorded in infra red ink and thus invisible to a human reader. As described in the applicant's co-pending applications USSN 09/_____ (Docket No. ART80US), USSN 09/_____ (Docket No. ART81US) and USSN 09/_____ 30 (Docket No. ART82US), a card of approximate size 4" x 6" (102mm x 152mm) can contain approximately 3-4megabytes of data depending on how the data is encoded and distributed across the surface of the card. The data in those applications is distributed in such a way that full recovery of the data there encoded, namely an image, can be recovered even if up to 30% damage has occurred to the surface of the card. To store an average page of text

5 requires approximately 2 kbytes of digital data for text only, hence 3 megabytes of data would record approximately 1.5 thousand pages of written text. An average book contains between 250-550 pages and such a book is readily accommodated by the format of the present disclosure. In addition, images may be interspersed with the text as thumbnail (reduced sized) images in a suitable file format for example jpeg, gif, tiff, bmp to name a few.

10 The preferred embodiment provides an adaptation of the particular technology as disclosed in the aforementioned patent specifications USSN 09/_____ (Docket No. ART80US), USSN 09/_____ (Docket No. ART81US) and USSN 09/_____ (Docket No. ART82US). In this adaptation, the camera system and the printing system is dispensed with and replaced with a large screen reader. The cards according to the preferred embodiment are then provided having an indicator of the information which is recorded on the card. The information in a fault tolerant encoded form is printed in infra-red ink over that indicator. For example the card could include a book's content or a newspaper content. An example of such a system is as illustrated in Fig 1 wherein the card 10 includes a book title on the card with data printed thereon in infra-red ink as shown by arrow 11. The card 10 is inserted in the reader 12 which includes a flexible display 13 which allows for the folding up of the card reader 12. The card reader includes display controls 14 which allow for paging forward and back and other controls of the card reader 20 12.

It can therefore be seen that the arrangement of Fig 1 provides for an efficient distribution of information in the form of books, newspapers, magazines, technical manuals, and so forth.

25 Various inkjet technologies can be used for printing of the card according to the current disclosure, for example an inkjet pagewidth printhead such as disclosed in the applicant's co-pending applications USSN 09/608,308 (Docket No. CPE01US), USSN 09/608,779 (Docket No. CPE02US), USSN 09/607,987 (Docket No. CPE03US), USSN 09/608,776 (Docket No. CPE04US), USSN 09/_____ (Docket No. CPE05US), and USSN 09/607,991 (Docket No. CPE06US) may be used. Suitable infra-red ink is disclosed 30 in the applicant's co-pending applications, Australian provisional patent applications PQ9412 (Docket No. INK01) and PQ9376 (Docket No. INK02) filed on 14 August 2000 and applicant's applications PQ9509 (Docket No. INK03) filed on 18 August 2000, and PQ9571 (Docket No. INK03A), and PQ9561 (Docket No. INK04) filed on 21 August 2000.

Data may be encoded in a manner or using a format as disclosed in applicant's USSN 09/113,070 (Docket No. ART028US) and USSN 09/112,785 (Docket No. ART29US), or USSN 09/_____ (Docket No. ART80US), USSN 09/_____ (Docket No. ART81US) and USSN 09/_____ (Docket No. ART82US), for example the Artcard format or the alternative Artcard format. Other formats may be used.

It would be appreciated by a person skilled in the art that numerous variations and/or modifications may be made to the present invention as shown in the specific embodiment without departing from the spirit or scope of the invention as broadly described. The present invention is, therefore, to be considered in all respects to be illustrative and not restrictive.

WE CLAIM:

1. An apparatus for reading data encoded in a fault tolerant digital form printed in invisible ink on a surface of a card said surface bearing an image said apparatus
5 comprising:

- a) scanning means for scanning in said encoded fault tolerant digital form of said data on said surface;
- b) means for processing said scanned data and for decoding said data into a secondary digital format;
- 10 c) means for outputting said secondary digital format to an output device with which said secondary digital format is usable;
- d) said output device presenting said data in a human readable form.

15 2. An apparatus as claimed in claim 1 wherein said data is encoded in a fault tolerant digital form using a Reed-Solomon process and said means for processing and decoding said data includes means for processing said Reed-Solomon process.

20 3. An apparatus is claimed in claim 2 wherein said output device includes a display device.

4. An apparatus as claimed in claim 1 wherein said invisible ink is an infra-red absorbing ink with negligible absorption in the visible spectrum

ABSTRACT OF THE DISCLOSURE

An user interface for reading data recorded in infra-red on the face of a card upon which may also be recorded a visual representation is disclosed. The data may include text and/or images equivalent to recording a book, newspaper, manual or a database.

Figure 1

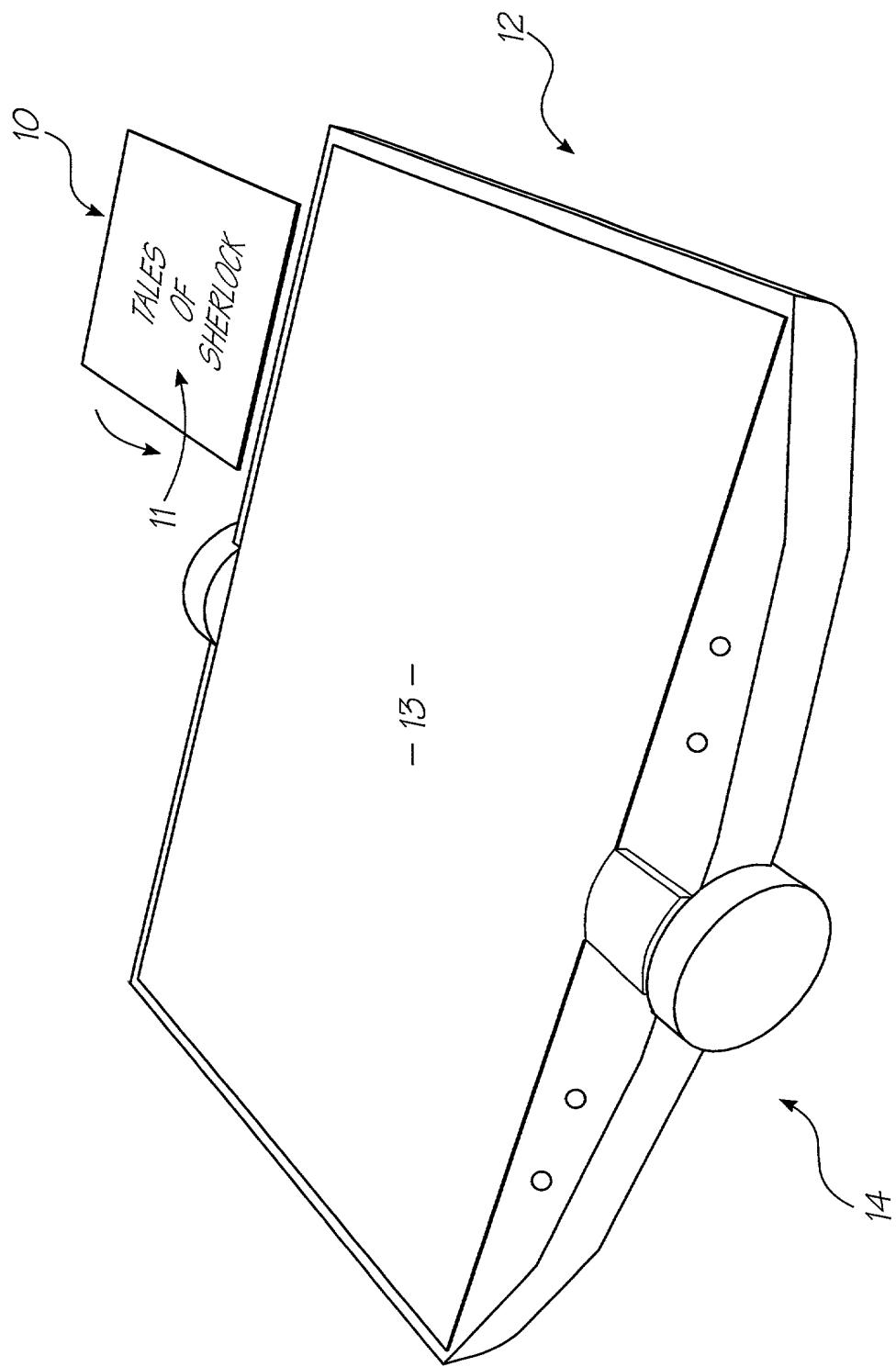


FIG. 1

Please type a plus sign (+) inside this box →

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**DECLARATION FOR UTILITY OR
DESIGN
PATENT APPLICATION
(37 CFR 1.63)**

Declaration Submitted with Initial Filing Declaration Submitted after Initial Filing (surcharge (37 CFR 1.16 (e)) required)

Attorney Docket Number ART84US

First Named Inventor KIA SILVERBROOK

COMPLETE IF KNOWN

Application Number /

Filing Date

Group Art Unit

Examiner Name

As a below named inventor, I hereby declare that:

My residence, post office address, and citizenship are as stated below next to my name.

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled

PRINTED CARD BASED USER INTERFACE SYSTEM

the specification of which

(Title of the Invention)

is attached hereto

OR

was filed on (MM/DD/YYYY) as United States Application Number or PCT International

Application Number and was amended on (MM/DD/YYYY) (if applicable)

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment specifically referred to above.

I acknowledge the duty to disclose information which is material to patentability as defined in 37 CFR 1.56.

I hereby claim foreign priority benefits under 35 U.S.C. 119(a)-(d) or 365(b) of any foreign application(s) for patent or inventor's certificate, or 365(a) of any PCT international application which designated at least one country other than the United States of America, listed below and have also identified below, by checking the box, any foreign application for patent or inventor's certificate, or of any PCT international application having a filing date before that of the application on which priority is claimed.

Prior Foreign Application Number(s)	Country	Foreign Filing Date (MM/DD/YYYY)	Priority Not Claimed	Certified Copy Attached?
			<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>

Additional foreign application numbers are listed on a supplemental priority data sheet PTO/SB/02B attached hereto:

I hereby claim the benefit under 35 U.S.C. 119(e) of any United States provisional application(s) listed below.

Application Number(s)	Filing Date (MM/DD/YYYY)	
		<input type="checkbox"/> Additional provisional application numbers are listed on a supplemental priority data sheet PTO/SB/02B attached hereto.

[Page 1 of 2]

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DECLARATION — Utility or Design Patent Application

I hereby claim the benefit under 35 U.S.C. 120 of any United States application(s), or 365(c) of any PCT international application designating the United States of America, listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States or PCT International application in the manner provided by the first paragraph of 35 U.S.C. 112, I acknowledge the duty to disclose information which is material to patentability as defined in 37 CFR 1.56 which became available between the filing date of the prior application and the national or PCT international filing date of this application.

U.S. Parent Application or PCT Parent Number	Parent Filing Date (MM/DD/YYYY)	Parent Patent Number (if applicable)

Additional U.S. or PCT international application numbers are listed on a supplemental priority data sheet PTO/SB/02B attached hereto.

As a named inventor, I hereby appoint the following registered practitioner(s) to prosecute this application and to transact all business in the Patent and Trademark Office connected therewith: Customer Number → Place Customer Number Bar Code Label here
 OR
 Registered practitioner(s) name/registration number listed below

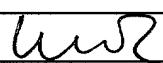
Name	Registration Number	Name	Registration Number

Additional registered practitioner(s) named on supplemental Registered Practitioner Information sheet PTO/SB/02C attached hereto.

Direct all correspondence to: Customer Number or Bar Code Label OR Correspondence address below

Name	Kia Silverbrook				
Address	Silverbrook Research Pty Ltd				
Address	393 Darling Street				
City	Balmain	State	NSW	ZIP	2041
Country	Australia	Telephone	61-2-9818-6633		Fax 61-2-9818-6711

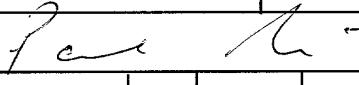
I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under 18 U.S.C. 1001 and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Name of Sole or First Inventor:		<input type="checkbox"/> A petition has been filed for this unsigned inventor						
Given Name (first and middle if any)				Family Name or Surname				
KIA				SILVERBROOK				
Inventor's Signature							Date	Oct. 18, 2000
Residence: City	Balmain	State	NSW	Country	Australia	Citizenship	Australian	
Post Office Address	393 Darling Street							
Post Office Address								
City	Balmain	State	NSW	ZIP	2041	Country	Australia	

Additional inventors are being named on the supplemental Additional Inventor(s) sheet(s) PTO/SB/02A attached hereto

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DECLARATION		ADDITIONAL INVENTOR(S) Supplemental Sheet Page <u>1</u> of <u>1</u>
--------------------	--	---

Name of Additional Joint Inventor, if any:		<input type="checkbox"/> A petition has been filed for this unsigned inventor					
Given Name (first and middle [if any])		Family Name or Surname					
PAUL		LAPSTUN					
Inventor's Signature							Date
Residence: City	Rodd Point	State	NSW	Country	Australlia	Citizenship	Norwegian
Post Office Address							
Post Office Address	13 Duke Avenue						
City	Rodd Point	State	NSW	ZIP	2046	Country	Australia
Name of Additional Joint Inventor, if any:		<input type="checkbox"/> A petition has been filed for this unsigned inventor					
Given Name (first and middle [if any])		Family Name or Surname					
SIMON ROBERT		WALMSLEY					
Inventor's Signature							Date
Residence: City	Epping	State	NSW	Country	Australia	Citizenship	Australian
Post Office Address							
Post Office Address	Unit 3, 9 Pembroke Street						
City	Epping	State	NSW	ZIP	2121	Country	Australia
Name of Additional Joint Inventor, if any:		<input type="checkbox"/> A petition has been filed for this unsigned inventor					
Given Name (first and middle [if any])		Family Name or Surname					
Inventor's Signature							Date
Residence: City		State		Country		Citizenship	
Post Office Address							
Post Office Address							
City		State		ZIP		Country	

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